DOCUMENT RESUME

ED 250 444 CE 039 776

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|---|---|
| TITLE | Introduction to the Vocational Agriculture Program. Revision. |
| INSTITUTION | Montana State Univ., Bozeman. Dept. of Agricultural and Industrial Education. |
| SPONS AGENCY | Montana State Office of Public Instruction, Helena. Dept. of Vocational Education Services. |
| PUB DATE | 84 |
| NOTE | 28p.; Initial material prepared by Clark Cleveland. |
| PUB TYPE | Guides - Classroom Use - Guides (For Teachers) (052) |
| EDRS PRICE | MF01/PC02 Plus Postage. |
| DESCRIPTORS | Agribusiness; *Agricultural Education; *Agricultural Engineering; *Agronomy; *Animal Husbandry; Behavioral Objectives; Competency Based Education; Curriculum Guides; Grade 9; Introductory Courses; Junior High Schools; *Leadership Training; Lesson Plans; Secondary Education; Soil Science; Student Organizations; Units of Study; *Vocational Education |
| IDENTIFIERS | Future Farmers of America |

ABSTRACT

Intended especially for use with a class of freshman students, this unit of instruction contains lessons that include a general discussion of the areas covered in vocational agriculture programs. Key concepts are presented, but individual instructors are encouraged to provide localized examples. A unit plan provides a discussion of the situation, general aims and goals of the unit, lesson titles, student and teacher activities, and a list of references. Six lessons are provided. Each lesson may consist of some or all of these components: a statement of need; objective(s); interest approach; key questions, problems, and concerns with related teaching techniques and information; application and followup; a list of references; and overhead transparency masters. Lesson topics are: a general introduction to the vocational agriculture program, leadership training in vocational agriculture through the Future Farmers of America program, plant and soil science, animal science, agricultural mechanics, and agricultural business. (YLB)

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# INTRODUCTION TO THE VOCATIONAL AGRICULTURE PROGRAM

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Agricultural & Industrial Education, Montana State University, Bozeman
1984 Revision

INTRODUCTION TO VOCATIONAL AGRICULTURE PROGRAM

The work presented herein was supported
by the Office of Public Instruction
Department of Vocational Education
Services

Montana State University
Department of Agricultural & Industrial Education
Room 126, Cheever Hall, Bozeman, Montana
July, 1984

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## Forward

This unit of instruction has been designed especially for use with a beginning class of freshmen students. The lessons include a general discussion of the areas that will be included in vocational agriculture programs. For your convenience, the material has been prepared to fit into a three-ring, loose-leaf notebook. Future material prepared to accompany this unit of instruction will be prepared in a similar manner so these materials can be added and can be changed with revised material.

It is suggested that teachers study the entire unit carefully before attempting to teach any of the lessons. Key concepts are presented; however, all of the background details are not necessarily included in the analysis of the questions and problems to be discussed. Each individual instructor is encouraged to provide localized examples.

Special thanks is extended to Mr. Clark Cleveland, Vocational Agriculture Instructor, Hinsdale, MT, who prepared the initial material included in this unit of instruction.

UNIT PLAN

UNIT: Introduction to Vocational Agriculture

Situation:

Sometimes students enroll in an educational program without fully understanding what kind of activities they will be expected to complete. It is important to show all students that have enrolled in vocational agriculture that they are in the program for a purpose. It will be necessary to outline for them, what they are going to do, how they will be performing the activities and how the entire vocational agriculture program will relate to a career in agriculture. The success of a vocational agriculture program is directly related to how well the instructor sells the student on the importance of training. The students must see a purpose for the thing they do and relate that to skills they will use in later life.

General Aims and Goals:

1. To provide a general introduction to the vocational agriculture program at the secondary level.
2. To introduce the students to the specific areas of instruction in the vocational agriculture program.
3. To help the students begin to set long range goals for themselves that will lead toward a career in agriculture.
4. To establish a feeling of expectancy on the part of the student for vocational agriculture.

Lesson Titles:

1. A General Introduction to Vocational Agriculture
2. Leadership Training and Vocational Agriculture Through the FFA
3. Plant and Soil Science
4. Animal Science
5. Agricultural Mechanics
6. Agricultural Business

Student Activities:

1. Develop some long range goals which will lead toward an agricultural career.
2. Make plans for an S.O.E.P.
3. Identify careers in agriculture and the accompanying competencies required in these careers.

Teacher Activities:

1. Collect agricultural statistics to be used in class.
2. Become thoroughly familiar with the "Montana Core Curriculum".
3. Arrange for appropriate field trips.
4. Arrange for resource person to speak to the class.
5. Order film material that can be used to introduce vocational agriculture to the students.

References:

Montana Core Curriculum
Montana Agricultural Statistics

UNIT: Introduction to Vocational Agriculture

Lesson: General Introduction

Need:

Often, students enroll in vocational agriculture and do not understand the total program. Many do not understand the many facets of the program. They also may not understand the fact that vocational agriculture involves the parents, community and the school. If students understand the purpose of a program they will be more willing to support the program.

Objectives:

1. Following the lesson and class discussions, the students will be able to explain the major lectures of the vocational agriculture program.

2. After the lesson has been taught and individual study, the students will be able to describe how vocational agriculture originated and when it started in the community.

3. Given the students individual situations, each student will be able to develop personal career goals as they relate to the vocational agriculture class.

| Key questions, problems, concerns | Teaching techniques and information |
|---|---|
| 1. How did vocational agriculture originate? | a. The Smith Hughes Act of 1917 provided for vocational agriculture in high school. |
| 2. Why did our forefathers think there was a need for agriculture training in our high schools? | a. With a strong agriculture, there will be a strong nation.<br>b. There was a need for high school training for those who did not plan to go to college and who wanted to start farming after they finished high school.<br>c. The Colleges of Agriculture in each state were also started at this time for those who wanted to continue their education. Example - MSU. |
| 3. What is the importance of agriculture at the local, state and national level? | a. Agriculture is the nation's largest single industry.<br>b. There are approximately 4.4 million farmers in America and 20% of the jobs in the U.S. are, in some way, related to agriculture.<br>c. There are 2.8 million farms on just over 1 billion acres. |

d. Montana has over 24,000 farms on 62 million acres.

e. Agriculture accounts for 30% of the State's income. Approximately $1.5 billion.

f. Use county and local statistics to follow up on agriculture locally.

4. What are the seven instructional areas in vocational agriculture?

a. Production Agriculture

b. Agricultural Supplies and Services

c. Agricultural Mechanics

d. Agricultural Products, Processing and Marketing

e. Horticulture

f. Renewable Natural Resources

g. Forestry

NOTE: FFA leadership training is an integral part of the vocational agriculture program.

5. What are the responsibilities of being a student of vocational agriculture?

a. Here are some examples for discussion.

1. A sincere interest in agriculture
2. A serious approach to your studies
3. S.O.E.P. (Show some examples)
4. Attendance
5. Notebook
6. FFA
7. Grading System
8. Establish long range goals (Show some examples)

NOTE: There may be specific responsibilities for students in different schools. Explain each responsibility carefully so the students will understand the requirements of the program.

6. How can VoAg lead to a career in agriculture?

a. A basic knowledge of agriculture received in vocational agriculture can open the door to the job market. One of every five jobs in the U.S. is related to agriculture.

b. Many employers are looking for students with vocational agriculture training. (Explain why)

7. How long has VoAg been in our community?

   a. Find out how long the local department has been established and give a short history of the success of the department and some of its former students.

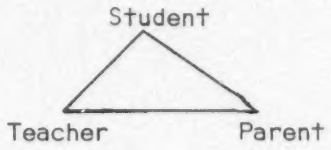
   NOTE: Invite a successful former VoAg student from the community to speak to the students.

8. What is the roll of the VoAg teacher?

   a. Discuss your roll as an advisor, a counselor, your job in the summer (S.O.E.P) and also an instructor in the many skills related to vocational agriculture.

9. What is the roll of your parents?

   a. Discuss the parent involvement in S.O.E.P., FFA, career selection and the important triangle of. (Show overhead 1)

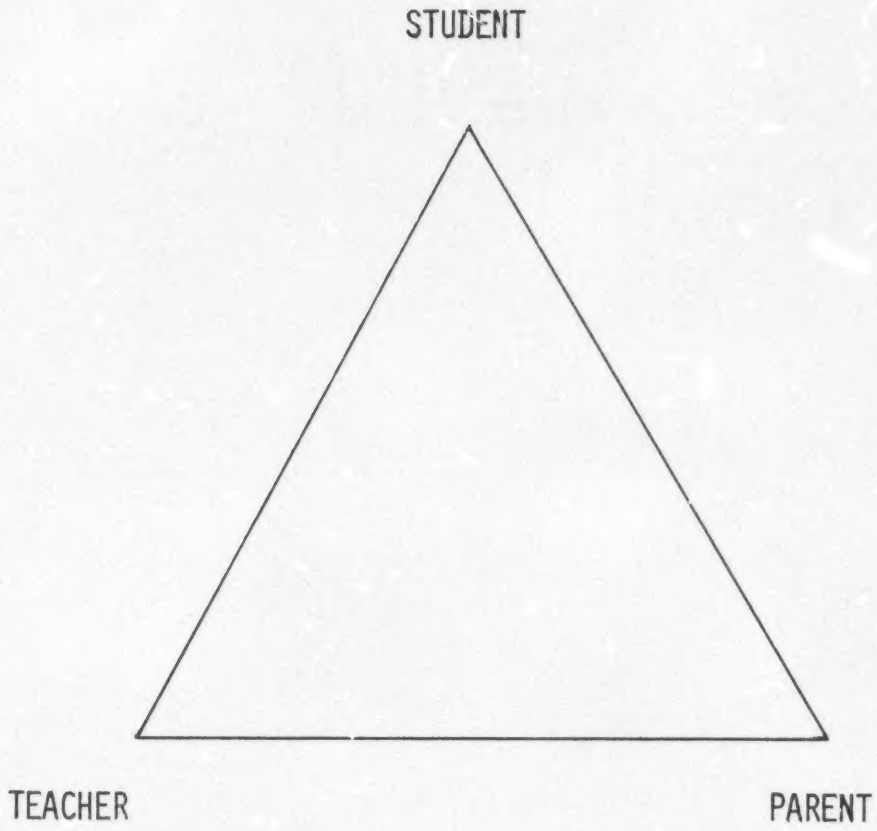



Application and Followup:

Have students list their goals in vocational agriculture and hand them in. After looking over their goals, either discuss them in class or with the students individually and show them how you plan to help them reach those goals.

References:

Montana Agricultural Statistics


STUDENT
TEACHER
PARENT

UNIT: Introduction to Vocational Agriculture

Lesson: Leadership Training in Vocational Agriculture through the Future Farmers of America (FFA) Program.

Need:

It is important that students understand that the FFA was started to provide support for the vocational agriculture program. The students need to understand that FFA is an integral part of the vocational agriculture program and can be utilized in developing the competencies needed for a career in agriculture. This lesson is needed to give a broad overview of FFA as opposed to going into great detail.

Objective:

After the lesson has been completed, the students will be able to explain why FFA is considered to be an integral part of the vocational agriculture program and how the FFA helps develop individual leadership.

Interest Approach:

Use a film or film strip showing the FFA in action. Other things that can be displayed are banners, jackets, plaques, medals, etc.

| Key questions, problems, concerns | Teaching techniques and information |
|---|---|
| 1. What is the FFA? | a. FFA is a national youth organization made up of students of vocational agriculture. |
| | b. The FFA is an intracurricular activity not an extracurricular activity (explain the difference). FFA is an integral part of the VoAg program. |
| | c. The FFA is the only youth organization to have a federal charter. |
| | d. The national organization consists of over 450,000 members nationally.<br>State - Approximately 2200<br>Local - _____ |
| 2. When was FFA started? | a. National - 1928<br>Montana - 1930<br>Local - _____ |
| | b. The numbers of chapters:<br>National _____ |

State _____

District _____

3. How can you benefit from FFA membership?

   a. The FFA is an organization in which you get out of it just what you put in.

   b. List some of the benefits.

4. What conditions must a person meet to become an FFA member?

   a. Students must be enrolled in vocational agriculture.

   b. Pay local, state and national dues (Say how much)

   c. Must be able to recite the creed from memory.

   d. Have an S.O.E.P. Project Planned.

5. What are the degrees of membership?

   a. Greenhand - Explain that this is the first degree of membership in the FFA.

   b. Chapter Farmer - Highest local chapter degree.

   c. State Farmer - 3% of state membership.

   d. American Farmer - .1% of membership.

6. What are some awards that an FFA member may receive?

   a. Proficiency awards - discuss such awards as beef, sheep, swine, placement in Ag production sales and service, etc. on local, state, and national level.

      1. Metal and certificate - local level
      2. $100 and plaque - state level
      3. $500 and plaque - national level

   b. Judging - Metals, trophies and trips. Discuss local, state and national trips taken by the local chapter.

   c. Public speaking - Discuss the public speaking contest. (Local, state, national)

7. What is Parliamentary Procedure?

   a. Parliamentary Procedure is learning the skills needed to conduct an orderly meeting.

   b. Briefly discuss but not in great detail.

      1. <u>The Gavel</u> - meeting control
      2. <u>Orders of Business</u> - How they make meeting more structured and run smoothly.
      3. Explain that there are different motions. Privileged, main, subsidiary and incidental.

4. Procedure in Voting - voice, stand, ballot.

8. What is the Parliamentary Procedure contest?

a. Discuss the local, district and state contest. The rules, awards and how much fun it is. This can be found in the state activities and award bulletin.

Application and Followup:

Divide the class into small groups and have your chapter officers or past officers discuss with the class their experiences in FFA and the use of Parliamentary Procedure and what they have personally received from FFA. Also, have each student write and hand in a description of what they think they will get out of FFA and Parliamentary Procedure Training. Discuss this with them personally or as a class.

References:

Montana Core Curriculum
Official FFA Manual
FFA Chapter Handbook
FFA Chapter Guide

UNIT: Introduction to Vocational Agriculture

Lesson: Plant and Soil Science

Need:

Plant and soil science is most essential to a strong production agriculture in Montana. Everyone needs to be aware of how we can conserve and build our soil resource. Students should look forward and expect to study this component of the agriculture environment.

Objectives:

If asked by someone outside of agriculture the students should be able:

1. To describe what areas of plant and soil science they will be studying in vocational agriculture.

2. To explain the importance of plant and soil science to agriculture and society.

3. To identify opportunities for employment that requires a knowledge of plant and soil science.

Interest Approach:

Have some visual aids available to show the students that relate to plant and soil science (examples: seed samples, plant mounts, soil samples, soil tester, PH meter, agricultural chemicals (fertilizer, 2-4 D, etc.)

| Key questions, problems, concerns | Teaching techniques and information |
|---|---|
| 1. What is soil? | a. Soil is the mineral and organic matter that supports plant growth on the earth's surface. |
| 2. What five things make up a soil? | a. 1. Rock<br>2. Organic matter<br>3. Living forms<br>4. Air<br>5. Water |
| | b. All agricultural production, both plant and animal, is dependent of proper care of the soil. |
| 3. What will be the areas of soil science discussed in vocational agriculture? | a. Discuss briefly the areas which will be covered in soil science.<br>1. Soil texture<br>a. Clay<br>b. Sand<br>c. Silt |

2. Soil structure - Platy, Blocklike, Prismatic, etc.
3. Organic matter - for good tilth.
4. Soil water - Capillary, gravitational, hygroscopic
5. Special soil condition - salty and sodic soils
6. Soil nutrients - Macronutrients: N, P, K, Ca, etc. Micronutrients: Ca, Fe, Za, etc.
7. Soil management - Contour farming, strip cropping, etc.
8. Soil conservation - erosion control, land capability classes, etc.
9. Soil fertilizers - N, P, K, kinds of liquid granular, etc.

4. What are the areas of plant science covered in vocational agriculture.

a. List the areas of plant science that you will cover in class. Examples:

1. Plant growth and reproduction
2. Range management
3. Field crops and management
4. Basic horticulture
5. Forestry (in some areas)
6. Crop pest management
7. Agricultural chemicals
8. Agricultural careers

5. What is covered in plant growth and reproduction?

a. Briefly discuss the areas covered in plant growth and reproduction.

1. Major plant parts
2. Seed production and vegetative reproduction
3. Germination
4. Transpiration
5. Respiration
6. Plant life cycle - annual, biennial, perennial
7. Photosynthesis

6. What is covered in range management?

a. Briefly discuss the areas covered in range management.

1. Factors affecting range plant growth
2. Classifying range plants - decreasers, increasers, invaders
3. Identifying range plants
4. Determining range condition
   a. Stocking rates
5. Determining the difference between such things as cool or warm, native or introduced, etc.
6. Classifying plants by forage value - good, fair, poor

7. Range management practice
   a. Grazing
   b. Renovation
   c. Weed and brush control
   d. Reseeding

7. What is covered in field crops and management?

   a. Briefly discuss what will be covered in field crops and management.

      1. Plant and soil identification - weeds and crops, seed analysis, etc.
      2. Seed bed preparation
      3. Seeding depth and rates
      4. Methods of planting
      5. Important crops grown in the community
      6. Tillage practices
      7. Harvesting
      8. Importance of good quality seed
      9. Grain quality - grain grading

8. What is covered in Basic Horticulture?

   a. Briefly discuss what will be covered in Basic Horticulture.

      1. Importance of the horticulture industry
      2. Plant identification
      3. Plant life cycles
      4. Importance of proper light, temperature, water and humidity
      5. Pruning
      6. Asexual propagation of plants - grafting, cuttings, etc.
      7. Transplanting
      8. Lawns - establishing nutritional needs and weed control

9. What is covered in forestry?

   a. Briefly discuss what will be covered in forestry.

      1. Major tree identification
      2. Tree parts and functions
      3. Tree reproduction
      4. Harvesting
      5. Manufacturing of wood products
      6. Wood energy

10. What is covered in crop pest management?

    a. Briefly discuss what is covered in crop pest management.

       1. Weed economic loss
       2. Classification of weeds - common, seminoxious, noxious
       3. State laws
       4. Life cycles
       5. Identification
       6. Controls - chemical biological

7. Insects
8. Insects control
9. Insect life cycle
10. Insect identification
11. State laws

11. What is covered in agricultural chemicals?

a. Briefly discuss what is covered in agricultural chemicals.

1. Chemical safety - application, handling and storage
2. Disposal of chemicals
3. Reading the label
4. State and federal regulations
5. Methods of application - proper mixing, calibration, amount per acre and cleaning
6. Cost of chemicals

Application and Followup:

Have the students list careers in the local area requiring a knowledge of plant and soil science. After reviewing those careers listed by the students, discuss them and list others not mentioned.

Reference:

Montana Core Curriculum Guide

UNIT: Introduction to Vocational Agriculture

Lesson: Animal Science

Need:

Livestock production is very important to a strong agricultural economy in Montana and the nation. Many agriculturally related occupations require a knowledge of livestock production. Vocational agriculture classes should provide each student with a thorough understanding of animal science.

Objectives:

If asked by parents or someone not familiar with vocational agriculture, each student should be able to:

1. Identify those areas of animal science to be studied in class.
2. Name the careers that require a knowledge of animal science to be most successful.

Interest Approach:

Have the students name the five primary classes of livestock in Montana and put them on the chalkboard. Then see if they can name some breeds for each class of livestock: beef, sheep, swine, dairy, horses.

| Key questions, problems, concerns | Teaching techniques and information |
|---|---|
| 1. What are the major areas of study in animal science? | a. Write on the board the areas of animal science that will be covered in vocational agriculture and then discuss each one briefly. Also tell the students the years when it will be taught.<br>1. Introduction to animal science<br>2. Livestock selection for breeding and fattening<br>3. Care and management of livestock for breeding and management<br>4. General animal nutrition<br>5. General animal health care<br>6. Approved practices for raising livestock |
| 2. What are some of the areas discussed in introduction to animal science? | a. Explain to the students what classes of livestock are important in your area. Beef, sheep, swine, etc.<br>b. Briefly explain that the following areas will be covered. |

1. livestock industry terms
2. Importance of the livestock industry local, state, national
3. Breeds of animals - beef, sheep, swine, dairy, horses, dual purpose, etc.
4. Digestive systems
5. Identify parts of the animal - beef, sheep, swine, dairy, horses
6. Job opportunities associated with the livestock industry
7. Male and female reproductive tracts, gestation periods, etc.
8. Importance of records

3. What are some of the areas discussed in livestock selection for breeding and fattening?

a. Briefly discuss the areas you will cover in animal selection.

1. Animal inheritance tracts
2. Evaluate performance records, pedigrees, etc.
3. Retail cuts of meats
4. Carcass evaluation
5. Livestock terms and reasons
6. FFA award areas and contests for livestock and meats

4. What are the areas discussed in care and management for breeding and fattening livestock?

a. Briefly discuss the areas that will be covered.

1. Care and feeding of female livestock during pregnancy
2. Signs of and care during parturition
3. Artificial insemination and embryo transplant
4. Care of newborn livestock
5. Proper livestock facilities, shelters, housing, feed and watering equipment
6. Weaning livestock
7. Rate of gain and dressing percentage
8. Proper transportation of livestock
9. Marketing of livestock

5. What are the areas in general animal nutrition?

a. Briefly discuss the areas covered in general animal nutrition.

1. Compare total feed costs to total livestock operation
2. Feed efficiency of livestock - beef, swine, sheep, etc.
3. Common classification of feed nutrients - carbohydrates, fats, protein, minerals, vitamins, and water
4. Roughage and concentrates
5. Formulating a ration
6. Balancing a ration

7. Ways of preparing livestock feeds
8. Calculating feed costs
9. Transportation of feeds

6. What are the areas covered in general animal health care?

a. Briefly discuss the areas covered in general animal health care.

1. Identify major disease organisms
2. Indicators of animal health
3. Prevention and control of animal diseases - beef, sheep, swine, dairy and horses
4. Sanitation programs
5. Infectious and noninfectious diseases
6. Types of injections
7. Vaccination and vaccination equipment

7. What are the areas covered in approved practices in raising livestock?

a. Briefly discuss the areas covered in approved practices in raising livestock.

1. Explain and demonstrate methods of tatooing, ear tagging, branding different classes of livestock
2. Explain and demonstrate methods of castrating, dehorning, and docking different classes of livestock
3. Explain and demonstrate methods of clipping, trimming the feet of livestock
4. Explain and demonstrate the proper procedure for training and preparing an animal for show

Application and Followup:

Take the class and tour different livestock facilities; beef, sheep, swine, dairy and horses or have a small livestock judging contest to introduce them to animal science.

Reference:

The Montana Core Curriculum Guide

UNIT: Introduction to Vocational Agriculture

Lesson: Agricultural Mechanics

Need:

The use of modern equipment in agriculture is increasing at a rapid rate. To properly use and maintain this equipment requires a great deal of skill in agricultural mechanics. The vocational agriculture program will give the student a good background in mechanics.

Objectives:

If asked by parents or those not familiar with the vocational agriculture program, each student should be able to:

1. Identify those areas of agricultural mechanics to be studied in the class and shop.

2. Name the careers that require a knowledge of agriculture mechanics to be most successful.

Interest Approach:

Most students will think this is their major area of interest. Take advantage of that by having some visual aids to show them. Examples - welding helmet, cutting torch, small engine, tools, some projects made by students, safety equipment, etc.

| Key questions, problems concerns | Teaching techniques and information |
|---|---|
| 1. How much time will be spent in agricultural mechanics? | a. Discuss the time spent in the agricultural mechanics and the block of time used - example: 9 week periods, semester blocks, alternate days, etc.<br>b. It is recommended that about 50% of the time be spent in the area of agricultural mechanics. |
| 2. What skills will be taught in agricultural mechanics? | a. List on the board the major areas of agricultural mechanics. Then discuss each area and the year it will be taught.<br>1. Shop management and safety<br>2. Drawing and sketching<br>3. Use of hand tools and hardware<br>4. Basic carpentry<br>5. Hot and cold metal<br>6. Arc and acetylene welding<br>7. Tractor and machinery operation and safety<br>8. Basic electricty<br>9. Small gas engines |

3. What are the areas covered in shop management and safety?

a. Discuss briefly the areas covered in shop management and safety.

1. Identification of hand and power tools.
2. The safe use of hand tools and power tools.
3. Proper safety procedures while working in the shop.
4. Keeping the shop clean, organized, and safe.
5. Location of safety equipment
6. Shop rules outlined by the instructor
7. Testing procedure for safety - example - 70% before shop entry, etc

4. What are the areas covered in drawing and sketching?

a. Discuss briefly the areas covered in drawing and sketching.

1. Proper lettering
2. Use of drawing equipment - T square, divider scale, etc.
3. Drawing three views of an orthographic drawing
4. Sketching
5. Drawing to scale
6. Calculating a bill of materials

5. What will be covered in hand tools and hardware?

a. Briefly discuss the areas covered in hand tools and hardware.

1. The following are example items that will be sharpened or reconditioned.

    a. hammers
    b. drill bits
    c. wood chisels
    d. cold chisels
    e. punches
    f. axes
    g. knives

2. Identification of hand tools.
3. Selection of grinding wheels, saw blades, sandpaper, sanding belts, files, etc.
4. Installing grinding wheels, saw blades, drills, etc.
5. Cleaning and storing tools
6. Identification of hardware - screws, bolts, hinges, rivets, nails, etc, and discuss their uses
7. How to properly order hardware items.

6. What will be covered in basic carpentry construction?

a. Briefly discuss the areas covered in basic carpentry construction. This is a large area. The following are examples. Use these examples and list your own.

1. Identifying kinds of wood
2. Calculating board feet
3. Grades of lumber
4. Kinds of paint and varnishes
5. Use of paint brushes, rollers, pads, etc.
6. Use of hand saws, drill, circular saws, table saws, planes,etc.
7. Identify building parts
8. Use of framing square
9. Cutting rafters

7. What are the areas covered in hot and cold metal?

a. Briefly discuss the areas covered in hot and cold metal. Listed are some of the areas that could be covered.

1. Hot metal

   a. Soldering - copper tubing, holes in a can, radiator, use of a tubing cutter, etc.
   b. Use of soldering copper and electric soldering iron
   c. Use of tin snips
   d. Heating metal - tempering, annealing, hardening, etc.
   e. Use of the anvil

2. Cold metal

   a. Ways of cutting cold metal - chisel, hacksaw, cutter wheel, etc.
   b. Drilling holes in metal
   c. Use of tap and dies
   d. Threading and cutting pipe
   e. Use of files
   f. Riveting
   g. Characteristics of metals - hardness, malleable, ductile, etc.

8. What will be covered in arc and acetylene welding?

a. Briefly discuss what will be covered in the arc and acetylene unit. The following are examples and you may want to add others:

1. Arc welding

   a. Equipment needed for arc welding
   b. Safety procedure for arc welding
   c. Electrodes AWS classifications
   d. Different welding joints, positions and symbols
   e. AC and DC welders and settings
   f. Striking an arc
   g. Running a bead
   h. Proficiency in running a pad, lap welds, etc. in flat, horizontal, vertical and overhead
   i. Determining weld quality

2. Oxyacetylene welding

   a. Equipment needed for acetylene welding
   b. Safety procedures for acetylene welding - flashbacks, etc.
   c. On - off procedures and proper pressures and tips, etc.
   d. Brazing versus fusion welding
   e. Cutting with the acetylene torch
   f. Proficiency in brazing and fusion welding - corner welds, butt welds, lap welds, fillet welds
   g. Assembly and disassembly procedures

9. What are the areas covered in tractor and machinery operation and safety?

   a. Briefly discuss what will be covered in tractor and machinery operation and safety.

      1. Tractor and machinery
      2. Use of operator's manual
      3. Parts of a tractor and machinery
      4. Pre-operational check - oil, filters, cooling system, tires, battery, etc.
      5. Proper driving procedures - stop, start, highway driving, side hills, rough ground, etc.
      6. Refueling

10. What is covered in basic electricity?

   a. Discuss briefly the areas covered in basic electricity.

      1. Electrical terms, theory and how electricity is produced
      2. Electrical safety
      3. Uses of electrical energy
      4. Reading an electric meter
      5. Calculating costs
      6. Discuss volt, amps, ohms, watts
      7. Actual wiring - entrance box, breakers, light switches (single and 3-way), splices - solderless, connectors, outlets, etc.

11. What is covered in small gas engines?

   a. Discuss briefly what is covered in a unit on small gas engines.

      1. Distinguish between 2-stroke cycle and 4-stroke cycle engines.
      2. Advantages and disadvantages of air cooled engines
      3. Proper maintenance of a small engine - oil, air filter, carburetor, spark plug, etc.
      4. Trouble shooting

5. Engine disassembly, cleaning, repair and assembly
6. Uses of such tools as pullers, micrometer, feeler gauge, and torque wrenches
7. Discuss the different uses for small engines.

12. What other areas will be covered in agricultural mechanics?

a. If you have a unit not covered, add it and discuss with the students at this time.

Application and Followup:

Have the students list those jobs in the community that use agricultural mechanics skills. Also have them list any of the skills discussed they have had experience with before entering vocational agriculture.

Reference:

Montana Core Curriculum Guide

UNIT: Introduction to Vocational Agriculture

Lesson: Agricultural Business

Need:

A great number of the students who take vocational agriculture will eventually be involved in some type of agriculturally related job or business. It is important that needed skills be learned early. An understanding of agricultural business will help the students choose a career.

Objectives:

When asked by parents or those not familiar with agricultural business, each student will be able to:

1. Identify those areas of agricultural business that will be studied in the vocational agriculture class.

2. Name the agricultural business careers that might be available.

Interest Approach:

Have the students list as many careers or occupations in the county or community dealing with agriculture or agricultural products, sales and service.

| Key questions, problems concerns | Teaching techniques and information |
|---|---|
| 1. What are some important agricultural statistics involving agricultural business? | a. Discuss a few agricultural statistics to show how big agricultural business is in the U.S., state and local areas.<br>1. The United States Statistics<br>a. Agriculture is the nation's largest industry with $600 billion in assets. Make sure figure is current.<br>b. Farmers spend $85 billion for operating expenses each year.<br>c. There are 4.4 million farmers and ranchers in 5 jobs in private business that are related to agriculture.<br>2. The Montana Statistics<br>a. 30% of Montana's income comes from agriculture or approximately $1.5 billion dollars.<br>b. Over 20% of the people in Montana are involved in agricultural business. |

3. County Statistics

a. Use county statistics found in the current Montana Agricultural Statistics Publication.

2. What are the areas covered in agricultural business?

a. Briefly discuss the area to be covered in the agricultural business unit and in what year of vocational agriculture it will be taught.

1. The importance of agricultural business
2. Types of agricultural business organization

a. Proprietorships, partnerships, corporations, cooperatives - how they work and the advantages and disadvantages of each.

Application and Followup:

Have each student make up a set of questions to ask and invite a local manager of an agricultural business in to your classroom to discuss the importance of agricultural business and answer questions the students have about agriculture.

References:

Montana Core Curriculum Guide
Montana Agricultural Statistics